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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/606,625

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Theodore M. Boyd-Davis

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EXAMINER

TALBOT, MICHAEL

ART UNIT

PAPER NUMBER

3722

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/606,625	Applicant(s) BOYL-DAVIS ET AL.	
	Examiner MICHAEL W. TALBOT	Art Unit 3722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-13,15,16,18-26,28-31 and 33-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-13,15,16,18-26,28-31 and 33-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 20 February 2008 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1,2,4-6,10-12,15,16,18-20,22-25,28,29,31 and 33-40 are rejected under 35 U.S.C. 103(a) as being obvious over Cable et al. (US 3,226,027). Cable et al. '027 shows in Figures 1-4 an apparatus comprising a track assembly configured to be attached to a work piece (15) via magnet assemblies (Fig. 3 and 12,13) including at least one rail (11,16) including an elongated, substantially smooth surface having a longitudinally-extending neutral axis and an integrally-formed rack (at 22) with a plurality of tapered/wedge/conical-shaped apertures (22) being uniformly spaced along and disposed within the substantially smooth surface extending along a pitch line that at least approximates the longitudinally-extending neutral axis. Cable et al. '027 further shows the track being substantially flat and having a width substantially greater than a thickness causing a stiffer bending moment that extends along the thickness direction and a more pliable bending moment that extends along the width direction (col. 3, lines 9-21). Cable et al. '027 further shows a carriage (14) including a drive assembly (motor 23) having an

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x-axis portion being moveably (col. 2, lines 33-57) coupled to the track assembly (via wheels 18) and moveable relative to the translational axis (left to right as viewed in Fig. 1) via a drive motor (23) coupled to a drive gear (21) for engaging the rack (col. 2, line 58-72) and a y-axis portion (26) slideably coupled to the x-axis portion (via sleeve 27) and moveable with respect to the x-axis portion along a y-axis oriented transversely to the track assembly and being approximately co-planar (top to bottom as viewed in Fig. 1) with the substantially smooth surface of the rail of the track assembly. Cable et al. '027 further shows the drive gear having a plurality of teeth (at 21) operatively engaging the plurality of tapered apertures of the rack (Fig. 2) wherein the apertures are adapted to match a cross-sectional profile of the teeth (col. 2, lines 58-60). Cable et al. '027 further shows the carriage supporting a manufacturing tool (24,25) to perform the manufacturing operation of cutting the work piece (col. 2, line 67 through col. 3, line 8). Cable et al. '027 further shows the magnet assemblies (Fig. 3 and 12,13) being coupled to the at least one rail such that the magnet assemblies are distributed along the longitudinally-extending neutral axis (Fig. 1) and disposed directly between the at least one rail and the work piece when the track assembly is engaged to the work piece (Figs. 1,2).

Furthermore, Cable et al. '027 does not disclose expressly that the plurality of apertures are tapered, wedge or conically shaped. Instead, Cable et al. '027 is silent to the shape of the plurality of apertures. At the time of the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to select a tapered, wedge or conically shaped apertures because Applicant has not disclosed that the tapered, wedge or conically shaped apertures provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected the apparatus of Cable et al. '027, and Applicant's apparatus to perform equally well with either the non-specific shape taught by Cable et al. '027 or the claimed tapered, wedge or conically shaped

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apertures because all three shapes provide the necessary space for engagement with the teeth of the drive member.

Furthermore, Applicant does not provide any criticality or unexpected results for the plurality of apertures having a tapered, wedge or conical shape as recited in claims 1,4,5,15,18,19,29,33 and 34, other than what is already well-known in the gearing art being that matching of the profiles of the teeth of the drive member to that of the aperture is advantageous, optimal and an obvious design choice.

4. Claims 7-9,21,30 and 43-48 are rejected under 35 U.S.C. 103(a) as being obvious over Cable et al. (US 3,226,027). Cable et al. '027 discloses the claimed invention except for the presence of two parallel rails. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include two rails oriented parallel to one another in lieu of a single rail for the purpose of enhancing the capacity of the manufacturing operations performed by the apparatus because it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art.

5. Claims 13,26,41 and 42 are rejected under 35 U.S.C. 103(a) as being obvious over Cable et al. (US 3,226,027) in view of Adams (US 3,627,436). Cable et al. '027 lacks an opposing-force support assembly coupled to the carriage and adapted to be secured to the work piece to at least partially counter-balance a manufacturing force exerted on the work piece by the manufacturing tool.

Adams '436 shows in Figures 1-5b an apparatus comprising a track assembly (11) adapted to the work piece (12,14) via fasteners (28) and mounting steps (25) and vacuum pads (29) including at least one rail having an integrally-formed rack with a plurality of apertures (157) extending along a pitch line that at least approximates the longitudinally-extending neutral axis. Adams '436 shows the track being substantially flat and having a width substantially greater

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than a thickness causing a stiffer bending moment that extends along the thickness direction and a more pliable bending moment that extends along the width direction. Adams '436 shows a carriage (15,20,24) with an x-axis portion (15) including a tool support (62 in Fig. 17) adapted to receive a manufacturing drill tool (17) moveably (col. 3, lines 20-27) coupled to the track assembly and moveable relative to the translational axis (x-axis), a y-axis portion (20,24) slideably coupled to the x-axis portion and moveable with respect to the x-axis portion along a y-axis oriented transversely to the track assembly (must move vertically as viewed in Figs. 7 and 8 in order to located latch mechanism within a previously drilled hole), and an opposing-force support assembly (22) coupled to the carriage and adapted to be secured to the work piece to at least partially counterbalance a manufacturing force exerted on the work piece by the manufacturing tool (col. 3, lines 20-37). Adams '436 shows the carriage including a drive assembly (144,145,147) having a drive motor (144) operatively engaging the track and adapted to drive the carriage along the track (col. 7, line 73 through col. 8, line 38). In view of this teaching of Adams '436, it would have been obvious to one of ordinary skill in the art to modify the apparatus of Cable et al. '027 to include an opposing-force support assembly as taught by Adams '436 to provide increased stability, reliability and accuracy between subsequent operations performed on a work piece such as riveting multiple rivets into an airplane wing.

Response to Arguments

6. Applicant's arguments filed 20 February 2008 have been fully considered but they are not persuasive.

7. Examiner respectfully disagrees with Applicant's assertion that the Cable et al. (US 3,226,027) references does not teach "the plurality of attachment devices coupled to the at least one rail such that the plurality of attachment devices are distributed along the longitudinally-extending neutral axis and disposed directly between the at least one rail and the work piece

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when the track assembly is engaged to the work piece". Cable et al. '542 clearly shows the plurality of attachment devices being magnet assemblies (see Figs. 1-3), wherein each magnet assembly consists of, at a minimum, two magnets (13) located at either end of a connecting strap (Fig. 1,3), therefore being "distributed along the longitudinally-extending neutral axis and disposed directly between the at least one rail and the work piece when the track assembly is engaged to the work piece".

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Any inquiry concerning the content of this communication from the examiner should be directed to Michael W. Talbot, whose telephone number is 571-272-4481. The examiner's office hours are typically 8:30am until 5:00pm, Monday through Friday. The examiner's supervisor, Mrs. Monica S. Carter, may be reached at 571-272-4475.

In order to reduce pendency and avoid potential delays, group 3720 is encouraging FAXing of responses to Office Actions directly into the Group at FAX number 571-273-8300. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers, which require a fee, by applicants who authorize charges to a USPTO deposit account. Please identify Examiner Michael W. Talbot of Art Unit 3722 at the top of your cover sheet.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you

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would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. W. T./
Examiner, Art Unit 3722
19 March 2008

/Monica S. Carter/
Supervisory Patent Examiner, Art Unit 3722